

SYNTHETIC ANTIFERROMAGNETIC PINNED LAYER WITH FE/FESI/FE SYSTEM

ABSTRACT OF THE DISCLOSURE

5 A magnetoresistive (MR) device includes a synthetic antiferromagnetic (AFM) layer having an Fe/FeSi/Fe construction. A first Fe layer of the synthetic AFM layer has a magnetization substantially in a first direction, while a second Fe layer of the synthetic AFM layer has a magnetization substantially in a second direction that is substantially antiparallel to the first direction. The magnetoresistive device can be a spin valve in which a first surface
10 of the synthetic AFM layer is adjacent to a pinning layer, and a second surface of the synthetic AFM layer is adjacent to a spacer layer. Further, the spin valve includes a free layer that overlies the spacer, thereby being separated from the synthetic AFM layer by the spacer. The pinning layer, synthetic AFM layer, spacer, and free layer can be bounded by a first shield and a second shield to provide magnetic shielding of the spin valve sensor.